

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant(s): Vacon	
Application No.: 10/673636	Group Art Unit: 2687
Filed: 09/29/2003	
Title: A Wireless Switched Network	Examiner: Nguyen
Attorney Docket No.: 160-007	

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APPELLANT'S BRIEF PURSUANT TO 37 C.F.R. § 1.192

This Brief is being submitted in accordance with a Notice of Appeal filed contemporaneously with this Brief.

I. Real Party in Interest

The real party in interest is AutoCell Laboratories, Inc.

II. Related Appeals and Interferences

Appellants are not aware of any appeals or interferences that are related to the present case.

III. Status of the Claims

Claims 2, 7, 9, 14, 16 and 21 are currently pending in this application. This is an appeal from the final office action dated September 28, 2006. In that final office action the rejections of all of the pending claims was made final. No claims have been allowed. The rejections of claims 2, 7, 9, 14, 16 and 21 are the subject of this appeal.

IV. Status of Amendments

In the most recent Amendment, filed on August 2, 2006, claims 2, 7, 9, 14, 16 and 21 were amended. The amendments to those claims were entered by the Examiner and the arguments considered, as indicated in the final office action.

V. Summary of Claimed Subject Matter

Claims 2, 7, 9, 14, 16 and 21 recite features of a wireless access point. As discussed in the Background, and as well known in the art, access points are

fixed-position devices which interface between a network and a wireless mobile device, i.e., the access point provides network access to the mobile device.

Claims 2, 9 and 16 recite an access point feature including a signal strength indicator that allows an installer to know the relative strength of signals which are received by the access point from other devices. This feature, e.g., a light which flashes more frequently in response to a stronger signal, facilitates placement of the access point without prior knowledge of the location of all other access points, and without reference to a management terminal. For example, the installer could walk around an office and mount the access point in a place where there is less interference as shown by the flashing light on the access point. Support for claims 2, 9 and 16 is in the Specification at pp. 5-6 under the heading “New Installation,” and in Figures 2 and 3. In the specifically described embodiment, the signal strength indicators are installation LEDs 22 and 24 on access point 12.

Claims 7, 14 and 21 recite features of an access point including adjustment of transmission power and automatic channel selection. In short, the access point automatically selects a channel by first testing each channel in a group by reducing its own transmit power until no other access points are heard on that channel, and then selecting the channel on which it was necessary to reduce power by the least amount, i.e., the channel which permitted the greatest transmit power. This operation facilitates automatic channel selection in a manner which tends to provide service over a greater physical area than would random channel

selection. Support for the claimed operation features in the Specification at pp. 9-10 under the heading "Introduce a New AP," and in Figure 9.

VI. Grounds of Rejection to be Reviewed on Appeal

- A. Claims 2, 9 and 16 stand rejected as anticipated under 35 U.S.C. 102(b) by U.S. Patent 5,933,420 to Jaszewski et al. ("420 patent").
- B. Claims 7, 14 and 21 stand rejected as obvious under 35 U.S.C. 103 over the '420 patent in view of U.S. Patent 6,732,163 to Halasz ("163 patent").

VII. Argument

- A. **Claims 2, 9 and 16 distinguish the '420 patent by reciting features which provide the user with information directly from the access point rather than through a management application run on a separate terminal.**

It is well established that "[a]nticipation requires the disclosure in a single prior art reference of each element of the claim under consideration." *W.L. Gore & Associates, Inc. v. Garlock, Inc.*, 721 F.2d 1540, 220 USPQ 303 (Fed. Cir. 1983), *cert. denied*, 469 U.S. 851 (1984). Appellants assert that the rejection of claims 2, 9 and 16 under 35 U.S.C. 102 fails to meet this requirement, since the '420 patent does not include the claimed limitation of an access point which itself has a signal strength indicator that allows an installer to know the relative strength of signals which are received by the access point from other devices.

The '420 patent teaches a network manager (110) that is used to help assign spectrum in a wireless local area network ("WLAN"). As shown in Fig. 1, the network manager (110) is distinct from the access points (111, 112, 113, 114). As described at column 3, lines 27-32, the "network manager 110 includes a computer such as an IBM compatible PC, a Sun workstation, a Macintosh computer, or a specialized network management device." Clearly, the network manager (110) is not an access point equipped to provide wireless network access to a mobile station.

In order to perform spectrum assignment according to the teaching of the '420 patent, each access point measures the signal strength of signals received from its neighbors and reports that information back to the network manager.¹ The network manager then tabulates the received information, and displays results as illustrated in Figs. 3 and 4.² The network manager may then display channel assignments.³

Each of Claims 2, 9 and 16 recite an access point having an indicator operable to provide an external indication of the signal strength directly from the first access point to a human being. Unlike the '420 patent, the claimed feature is part of an access point rather than a network manager run by a separate terminal. In other words, the external indication of signal strength of nearby access points according to the '420 patent is at best only indirectly provided to the user.

¹ Column 2, lines 23-42

² Column 2, lines 36-37

³ Column 2, lines 43-56

The claimed signal strength indicator on the access point is an improvement relative to the technique of the '420 patent, which tends to be quite inconvenient in the real world. When installing a new access point in an existing WLAN, particularly a large or complex WLAN, it is often inconvenient for the installer to move back and forth between the access point and the network manager workstation (which may be in a wiring closet or IT department, perhaps in a different building). Since the access point and the network manager are typically not in close proximity, the installer must walk back and forth between the two devices each time the access point is moved to a new potential location in order to evaluate interference. Alternatively, two installers will attempt to coordinate by telephone, i.e., one at the network management terminal, the other with the access point. Even so, the network manager software may require the installer to study or maintain an accurate floor plan indicating specifically where access points are located. In the case where there are neighboring access points owned by different businesses, it may not even be practical to have such a floor plan because one cannot control access point redeployment by a neighboring business. The presently claimed invention helps to solve these problems by having the access point itself provide an external indication directly to the installer. For example, the access point may show a flashing light, buzzer, or other signal so that the installer can physically walk around with the access until the best mounting position is found, without any need to view a network manager monitor.

The inventive feature described above is recited in claim 2 as “**a first access point** operable to provide wireless network access to client devices coupled to a wireless network ... an indicator operable to provide an external indication of the signal strength **directly from the first access point to a human being**, the indication being perceivable by the human being and also being indicative of the signal strength of the second access point.” (emphasis added) Claims 9 and 16 recite similar language. Withdrawal of the rejections of claims 2, 9 and 16 is therefore requested.

B. Claims 7, 14 and 21 distinguish the combination of the ‘420 patent in view of the ‘163 patent by reciting channel selection as a function of adjustment of an access point’s own transmit power rather than the transmit power of neighboring access points.

To establish *prima facie* obviousness of a claimed invention, all the claim limitations must be taught or suggested by the prior art. *In re Royka*, 490 F.2d 981, 180 USPQ 580 (CCPA 1974). “All words in a claim must be considered in judging the patentability of that claim against the prior art.” *In re Wilson*, 424 F.2d 1382, 1385, 165 USPQ 494, 496 (CCPA 1970).

The Examiner concedes that the ‘420 patent fails to teach the recited elements of (i) reducing transmission power and (ii) choosing the frequency associated with the highest stored transmission power.⁴ However, the Examiner

⁴ Final Office Action at page 7

asserts that these elements are taught by the '163 patent at Fig. 4, col. 8, line 45 through col. 9, line 48, and col. 10, lines 39-54.⁵

The '163 patent teaches that a base station selects a channel based on the signal strength of other devices. The base station first transmits a probe request packet to prompt other base stations on the same channel to transmit probe response packets.⁶ If a response is received then the signal strength of the response is evaluated.⁷ This is also illustrated in Fig. 4 by the block "RECORD SIGNAL STRENGTH AT FREQUENCY X." If no channel is clear, the frequency **of the base unit** which has the weakest signal strength is favored for selection.⁸ Therefore, channel selection is a function of the signal strength of other base stations. While this might select the channel with the least interference, the results will still be less than optimal in a crowded environment.

In contrast with the '163 patent, each of claims 7, 14 and 21 recite reducing transmission power. In a crowded environment where all available channels are utilized (or have interference from other sources), it is insufficient to simply select the channel with the lowest power from a neighboring access point because that may still cause significant interference. The presently claimed invention helps solve this problem by reducing transmission power. Applicant is unable to find that limitation anywhere in the cited references. Claim 7 therefore distinguishes the cited combination by reciting "logic for reducing transmission power." Claims 14 and 21 recite similar language.

⁵ Id.

⁶ Column 8, lines 61-67

⁷ Column 9, lines 10-13, and Fig. 4

⁸ Column 10, lines 44-48

In further contrast with the '163 patent, each of claims 7, 14 and 21 recite that channel selection is a function of the access point's own transmit power level, rather than the transmit power of its neighbors. In particular, for each channel the access point reduces its own power until no other access point is heard,⁹ and then the access point compares the results, and selects the channel on which the least reduction was required. Claim 7 recites this feature as "reducing transmission power ... storing the transmission power at which no other access points are heard ... comparing said stored transmission powers ... choosing for operation the frequency associated with the highest stored transmission power." In a crowded network environment this improves performance by adjusting both transmit power and channel selection, in a dependent relationship, rather than simply selecting the channel with the least signal from neighbors, which may be unacceptably poor. Claims 14 and 21 recite similar language.

For the reasons stated above, withdrawal of the rejections of claims 7, 14 and 21 is requested.

⁹ N.B. the best result is obtained when all APs operate in this manner

VIII. Conclusion

Appellants submit therefore that the rejections of the present claims under 35 U.S.C. 102 and 103, based on the '420 patent and the '163 patent are improper for at least the reasons set forth above. Appellants accordingly request that the rejections be withdrawn and the case put forward for allowance.

Respectfully submitted,

November 14, 2006
Date

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Appendix A - Claims

1. (cancelled)

2. (previously presented) A first access point operable to provide wireless network access to client devices coupled to a wireless network, the first access point comprising:

a receiver operable to detect a signal from a second access point, distinguish that signal from other signals, and measure strength of the signal; and

an indicator operable to provide an external indication of the signal strength directly from the first access point to a human being, the indication being perceivable by the human being and also being indicative of the signal strength of the second access point,

whereby proximity of the second access point relative to the first access point can be estimated by the human being directly from reference to the first access point without knowing the precise geographic location of the second access point.

3. (cancelled)

4. (cancelled)

5. (cancelled)

6. (cancelled)

7. (previously presented) An access point operable to provide wireless network access to client devices coupled to a wireless network, the access point comprising:

a controller capable of automatically choosing one of a plurality of radio frequencies on which to operate, said controller choosing said frequency after evaluating frequencies on which other access points operate, said controller comprising:

- a. logic for picking a frequency;
- b. logic for transmitting on said frequency;
- c. logic for receiving on said frequency;
- d. logic for evaluating whether other access points are heard on said frequency;
- e. logic for reducing transmission power;
- f. logic for evaluating whether said other access points are still heard on said frequency;
- g. logic for storing the transmission power at which no other access points are heard;
- h. logic for picking a next frequency as the frequency and repeating steps b-g until all of the plurality of frequencies has been picked;
- i. logic for comparing said stored transmission powers;
- j. logic for choosing for operation the frequency associated with the highest stored transmission power.

8. (cancelled)

9. (previously presented) A method executed by a first access point for facilitating deployment of the first access point comprising the steps of:
- receiving a plurality of signals;
 - distinguishing, in the plurality of signals, a signal from a second access point;
 - determining a signal strength of the signal from the second access point; and
 - providing on the access point an external indication of the signal strength that is perceptible by a human being, the external indication provided directly from the first access point to the human being,
- whereby the first access point's proximity relative to the second access point can be estimated by the human being directly from reference to the first access point without knowing the precise geographic location of the second access point.

10. (cancelled)

11. (cancelled)

12. (cancelled)

13. (cancelled)

14. (previously presented) A method comprising the steps of:
- providing an access point operable to provide wireless network access to client devices coupled to a wireless network;

automatically choosing by the access point one of a plurality of radio frequencies on which to operate, after evaluating frequencies on which other access points operate,

wherein the step of automatically choosing comprises the steps of:

- a. picking a frequency;
- b. transmitting on said frequency;
- c. receiving on said frequency;
- d. evaluating whether other access points are heard on said frequency;
- e. reducing transmission power;
- f. evaluating whether said other access points are still heard on said frequency;
- g. storing the transmission power at which no other access points are heard;
- h. picking a next frequency as the frequency and repeating steps b-g until all of the plurality of frequencies has been picked;
- i. comparing said stored transmission powers;
- j. choosing for operation the frequency associated with the highest stored transmission power.

15. (cancelled)

16. (previously presented) A program product for execution by a first wireless device comprising a computer readable medium having embodied therein a computer program for storing data, the computer program comprising:

logic operable to detect a signal from a second wireless device, distinguish that signal from other signals, and measure strength of the signal; and

logic for causing a human-perceptible external indication of the signal strength, the external indication provided directly from the first wireless device to the human being, whereby the relative proximity of the second wireless device can be estimated by the human being directly from reference to the first wireless device without knowing the precise geographic location of the second wireless device.

17. (cancelled)

18. (cancelled)

19. (cancelled)

20. (cancelled)

21. (previously presented) A program product comprising a computer readable medium having embodied therein a computer program for storing data, the computer program comprising:

logic for operation in an access point, the access point operable to provide wireless network access to client devices coupled to a wireless network, the logic for automatically choosing one of a plurality of radio frequencies on which to operate, the logic choosing said frequency after evaluating frequencies on which other access points operate, the logic comprising:

a. logic for picking a frequency;

- b. logic for transmitting on said frequency;
- c. logic for receiving on said frequency;
- d. logic for evaluating whether other access points are heard on said frequency;
- e. logic for reducing transmission power;
- f. logic for evaluating whether said other access points are still heard on said frequency;
- g. logic for storing the transmission power at which no other access points are heard;
- h. logic for picking a next frequency as the frequency and repeating steps b-g until all of the plurality of frequencies has been picked;
- i. logic for comparing said stored transmission powers;
- j. logic for choosing for operation the frequency associated with the highest stored transmission power.

Appendix B - Evidence Submitted

None.

Appendix C - Related Proceedings

None.